Trilce
ACADEMIA

Curso:

Geometría

Ciclo:

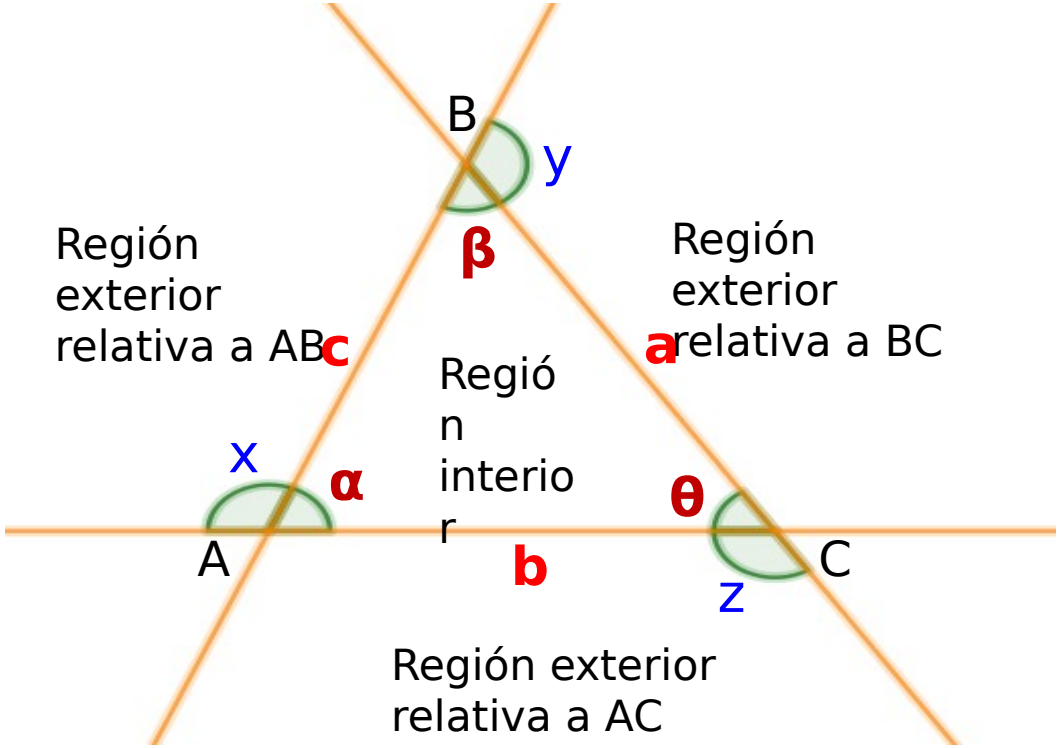
INTENSIVO – SAN MARCOS

Puente Carrión ¡Cómo llegar modo mochilero!

PTE. VERRUGAS

TRIÁNGULOS

DEFINICIÓN: Es aquella figura geométrica de tres lados, que se forma al unir tres puntos no colineales mediante segmentos de recta.



ELEMENTOS

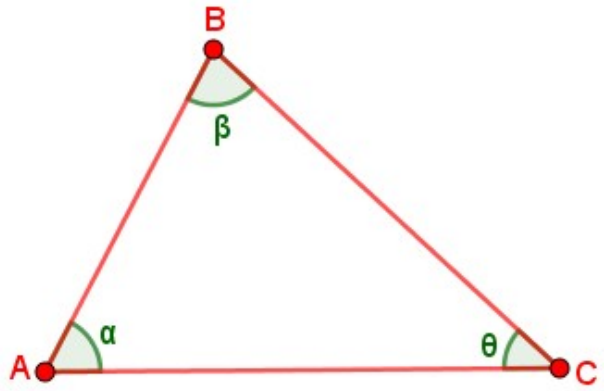
- Vértices: A, B y C
- Lados: AB, BC y AC

NOTACIÓN

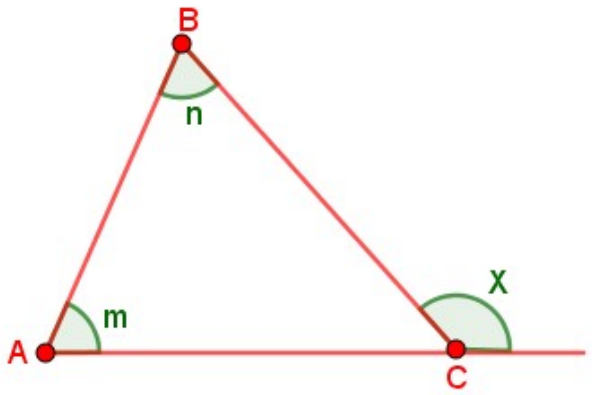
Δ ABC: Triángulo de vértices ABC

- Medida de ángulos internos: α , β y θ
- Medida de ángulos externos: x, y, z
- Perímetro: (2p)= a + b + c
- Semiperimetro: (p) =

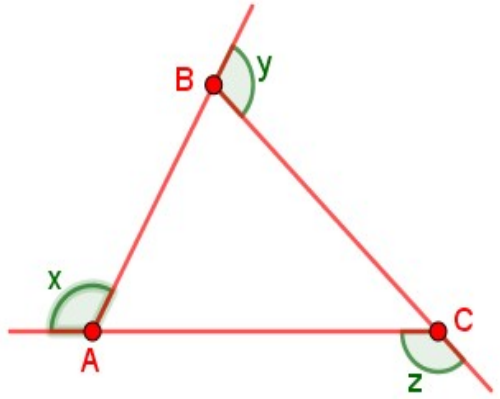
TEOREMAS FUNDAMENTALES



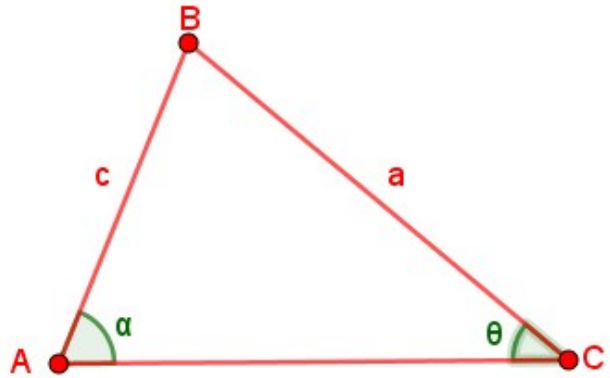
$\alpha + \beta + \theta = 180°$



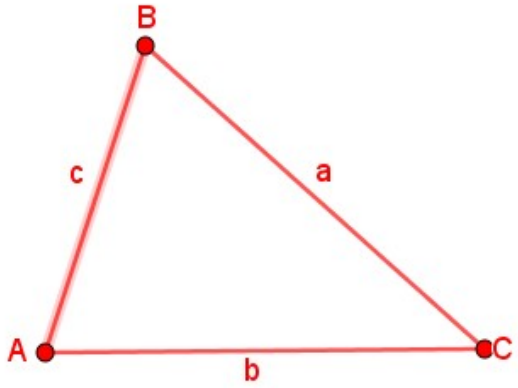
$x = m + n$



$x + y + z = 360°$



Si : $a > c \leftrightarrow \alpha > \theta$



- Teorema de existencia triangular

Si : $a < b < c$

$b + c$

$a - c < b < a + c$

$a - b < c < a + b$

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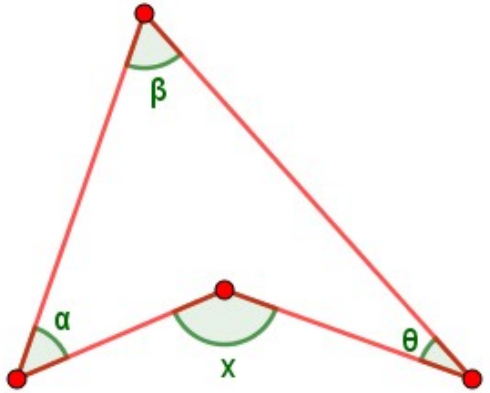
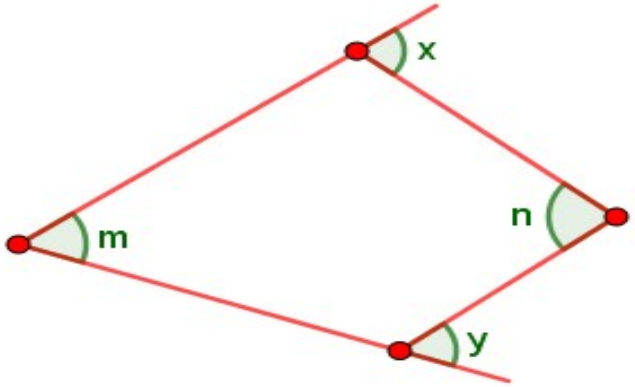
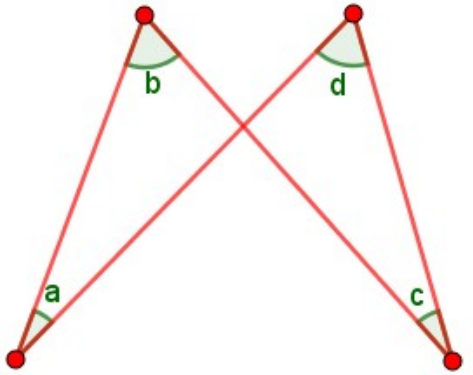
TEOREMAS ADICIONALES



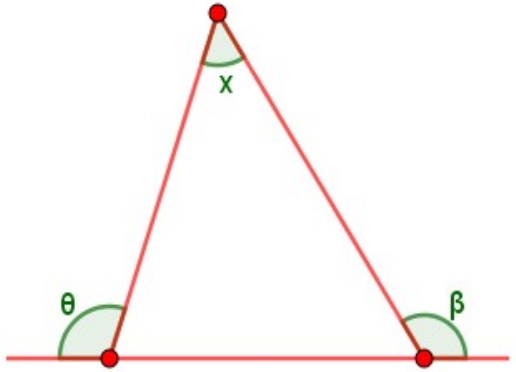
$x = \alpha + \beta + \theta$



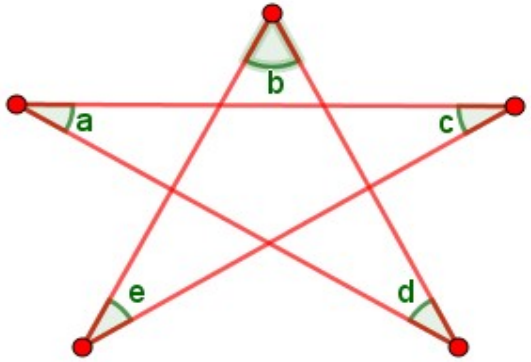
$x + y = m + n$



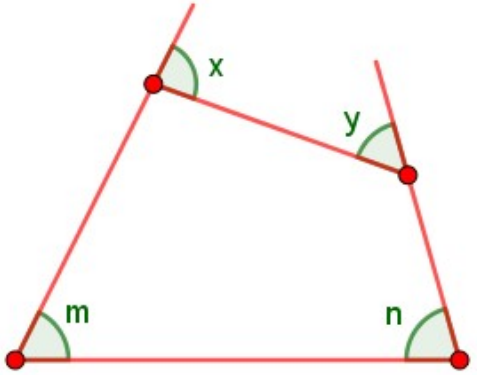
$a + b = c + d$



$\theta + \beta = x + 180°$



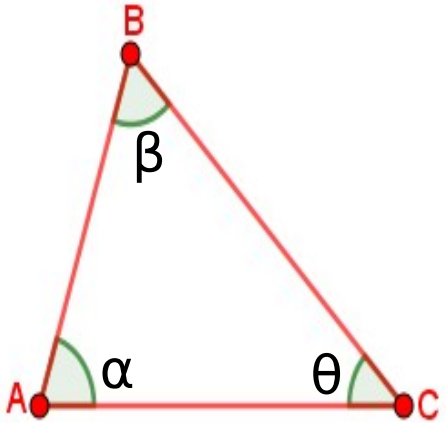
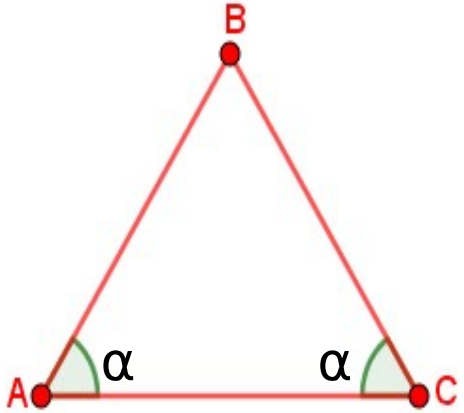
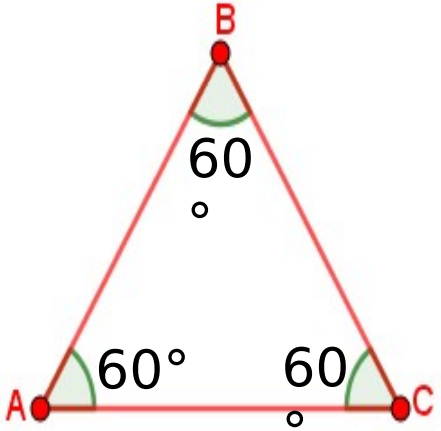
$a + b + c + d + e = 180°$



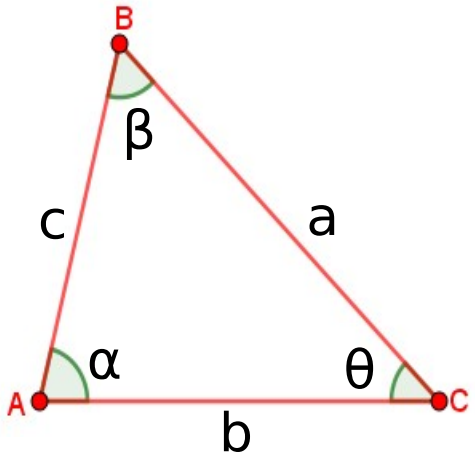
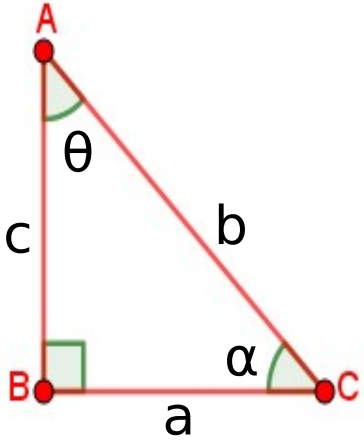
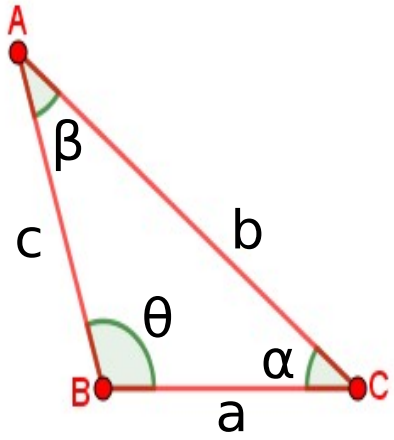
$x + y = m + n$

CLASIFICACIÓN

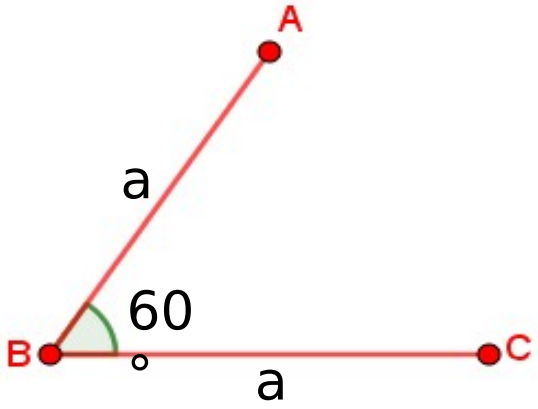
I. Según la medida de sus lados

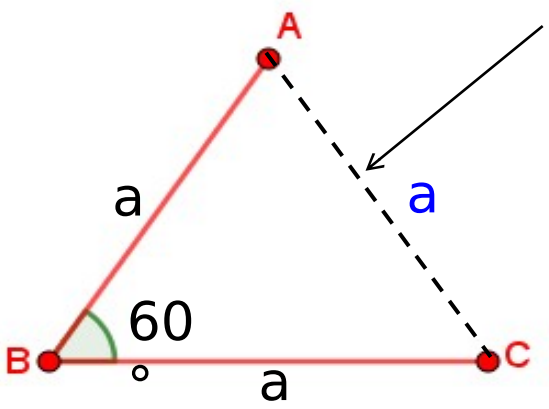
1. Triángulo Escaleno	2. Triángulo Isósceles	3. Triángulo Equilátero
		
AB ≠ BC ≠ AC	AB = BC	AB = BC = AC
α ≠ β ≠ θ	• AC : Base • α < 90°	* También llamado Isopleuro

II. Según la medida de sus ángulos.

1. Triángulo Acutángulo	2. Triángulo Rectángulo	3. Triángulo Obtusángulo
		
• $\alpha < 90°$ • $\beta < 90°$ • $\theta < 90°$	$\alpha + \theta = 90°$ Teorema de Pitágoras	• $\theta > 90°$ • $\beta + \alpha < 90°$ • $b > a$ • $b > c$
+	+	+

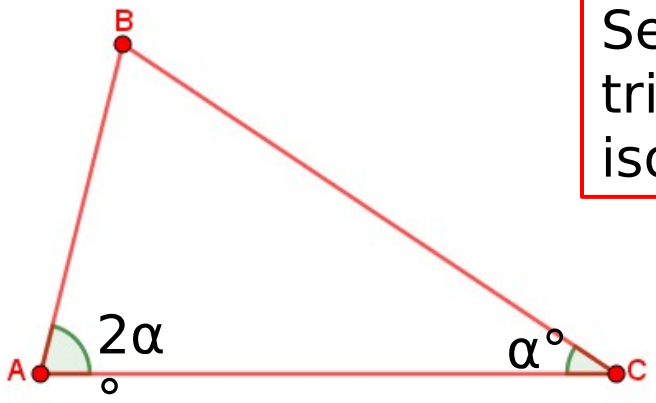
TRAZOS AUXILIARES



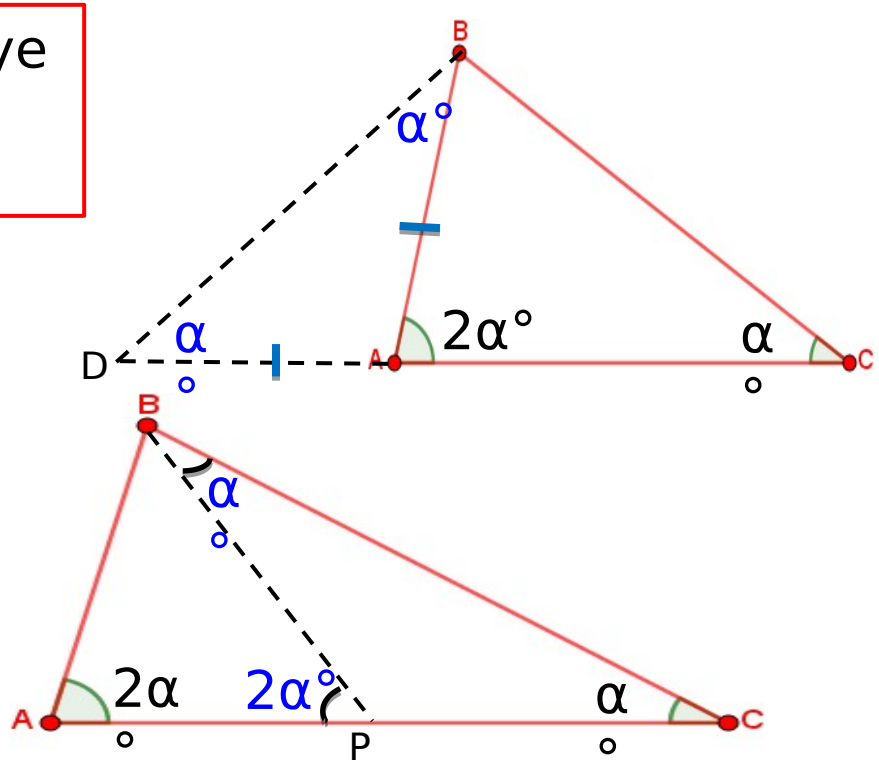


Trazar

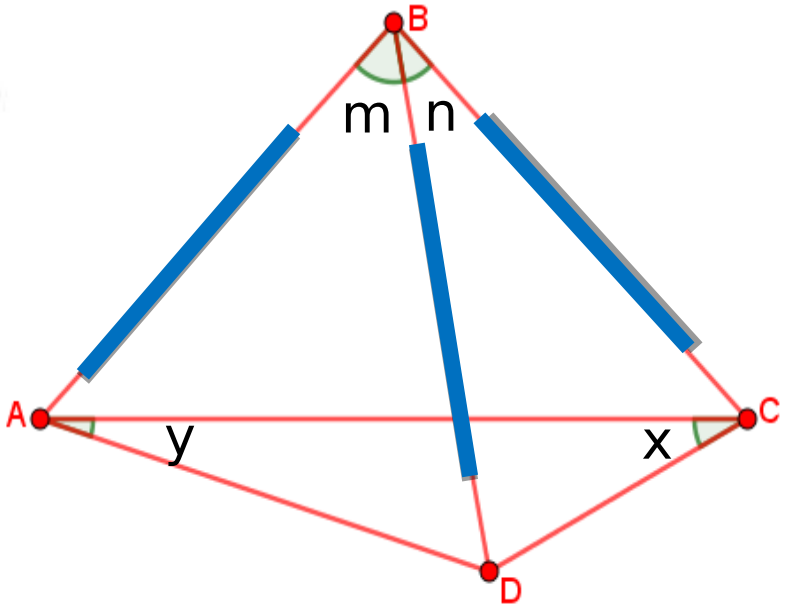
ΔABC: Es Equiláter o

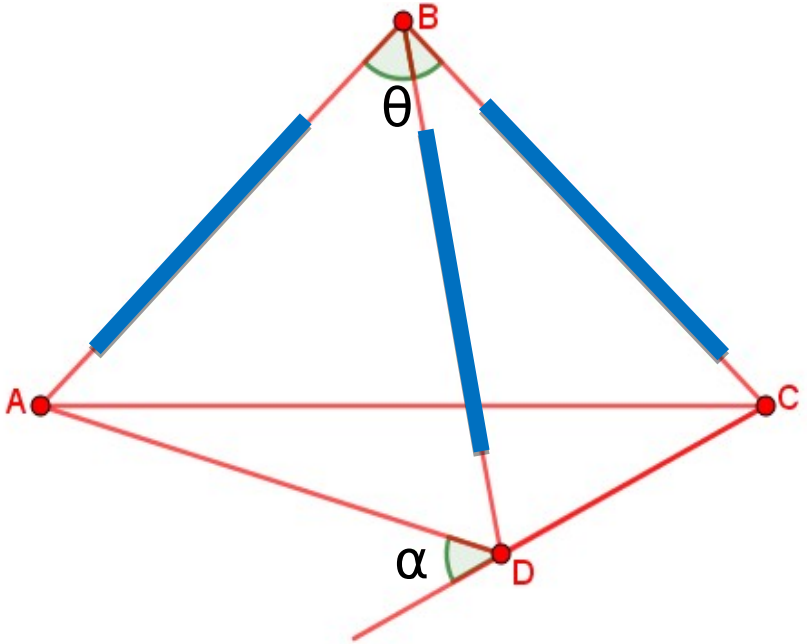


Se construye triángulo isósceles



OBSERVACIÓN





Se cumple:

$x = $

$y = $

Se cumple:

$\alpha = $

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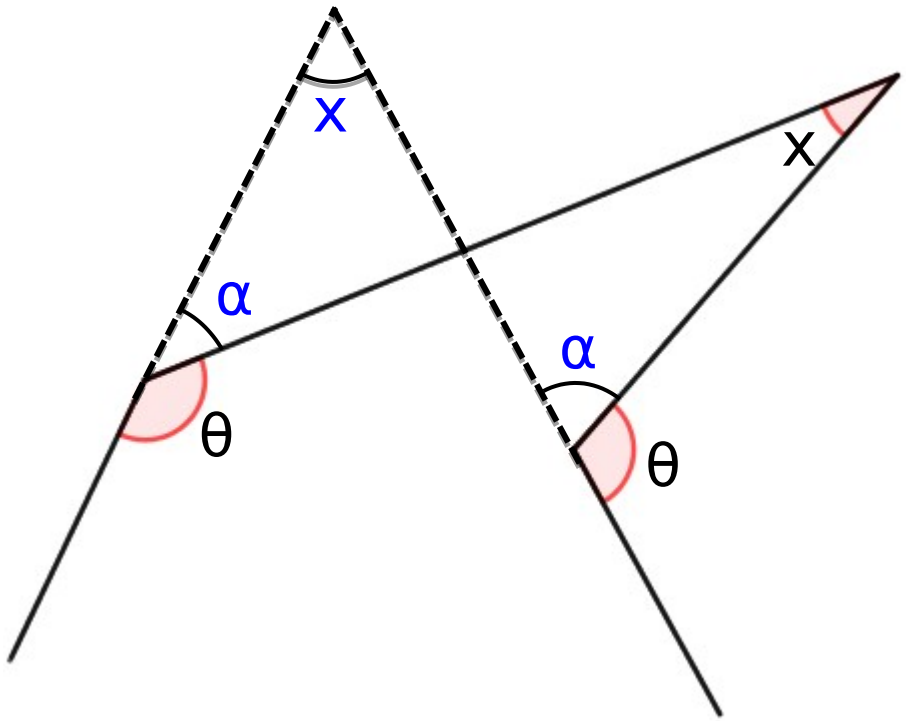
- Cada vez que encontremos el gráfico siguiente:



Se sugiere prolongar los segmentos adyacentes a las medidas angulares iguales, aprovechando un teorema adicional.

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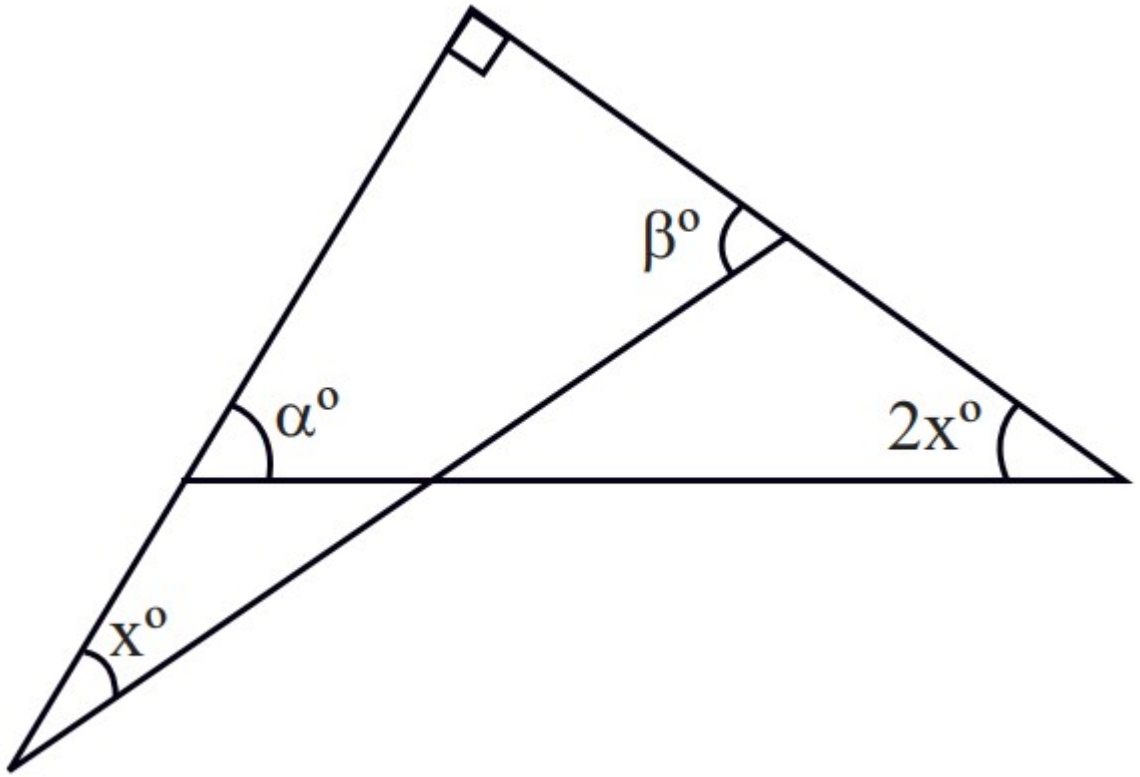
PROBLEMAS DE LA GUÍA

PROBLEMA 25

En el gráfico, si: $\alpha^\circ + \beta^\circ = 120^\circ$
Calcule: x°



RESOLUCIÓN

Se observa

$\alpha + 2x = 90^\circ$

$\beta + x = 90^\circ$ (+)

$120^\circ + 3x = 180^\circ$

$3x = 60^\circ$

$\therefore x = 20^\circ$

a) 5° b) 10° c) 15°
d) 20°

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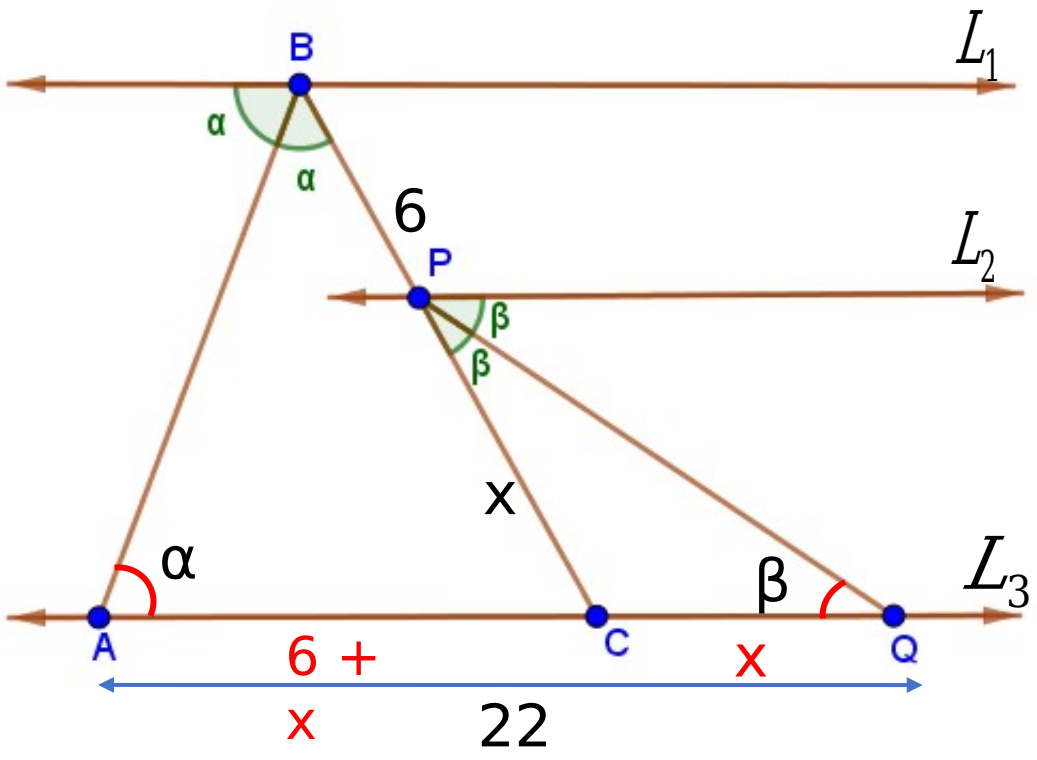
PROBLEMA 26

En el gráfico, $\overleftrightarrow{\ }$, si $\overleftrightarrow{BP}$ = 6u y AQ = 22u. Calcule: CP



a) 10u b) 7u c) 9u
d) 8u

RESOLUCIÓN

- ΔQCP: Es isósceles
  → CQ = x

Además: ΔABC: Es isósceles

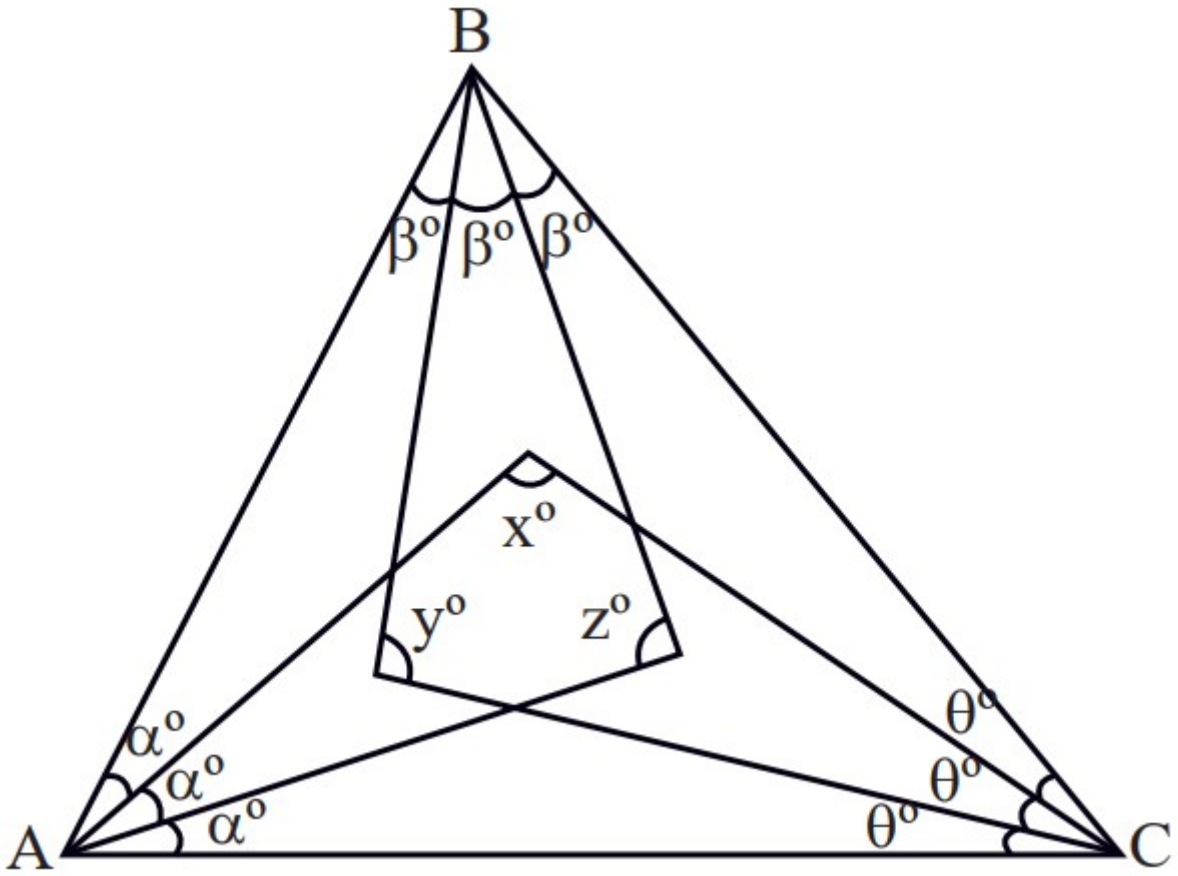
→ AC = 6+x

6 + x + x = 22

∴ x = 8

PROBLEMA 27

Del gráfico, calcule: $x^o + y^o + z^o$



a) 200° b) 270° c) 300°
d) 330°

RESOLUCIÓN

Se observa

$$3\square+3\beta+3\square=180°$$

$$\rightarrow\square+\beta+\square=60°$$

Luego

$$x=3\beta+\square+\square$$

$$y=3\square+\square+\beta$$

$$z=3\theta+\beta+\alpha$$

$$x+y+z=5(\square+\square+\beta)$$

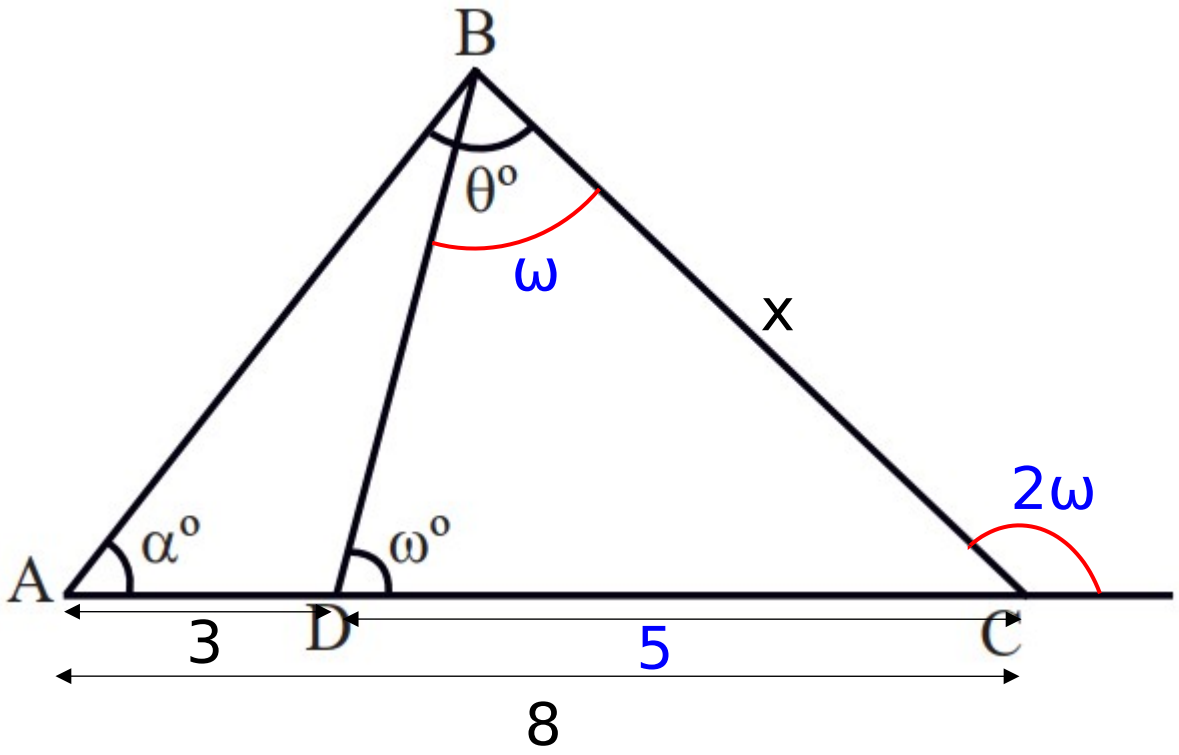
$$60°$$

$$x+y+z=300°$$

PROBLEMA 28

Del gráfico, calcule: BC.

Si: $2w^o=\alpha^o+\theta^o$, AD = 3u y AC = 8u



RESOLUCIÓN

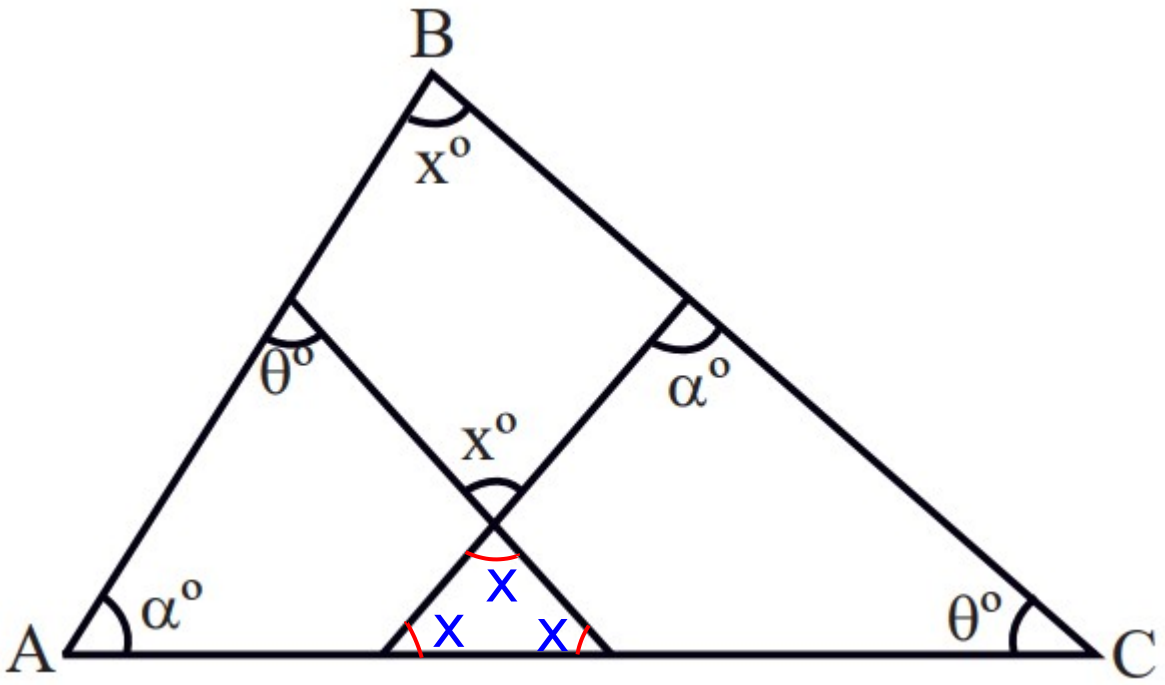
Se observa que: El ΔDBC es isósceles

∴ x = 5

a) 4u b) 5u c) 6u d) 7u

PROBLEMA 29

Del gráfico, calcule: x^o



RESOLUCIÓN

Se observa

$3x = 180°$

$\therefore x = 60°$

a) 30° b) 45° c) 50°
d) 60°

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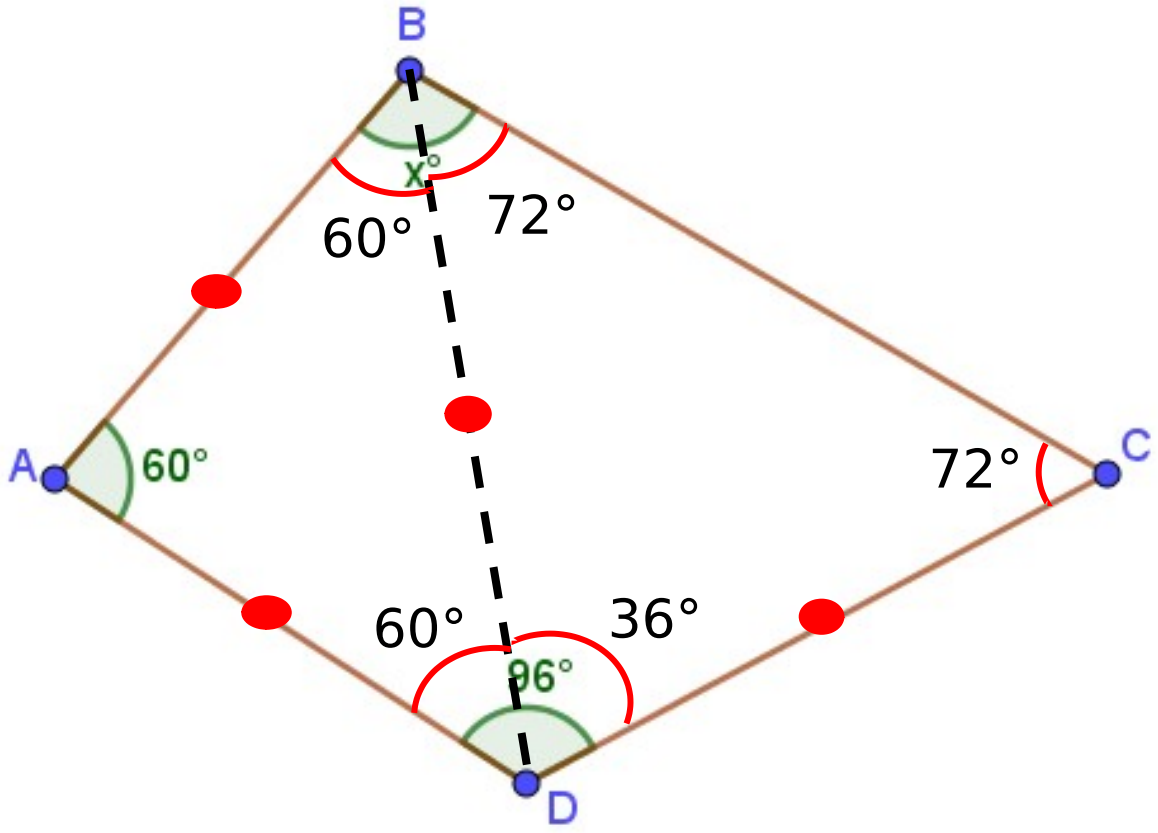
PROBLEMA 30

Del gráfico, calcule : x°. Si AB = AD



a) 102° b) 112° c) 124°
d) 132°

RESOLUCIÓN

Se sugiere trazar $\overline{BD}$

→ Δ ABD : Es equilátero

Además:
Δ BDC : Es isósceles

→ m ∢ DBC = m ∢BCD = 72°

→ x = 60° + 72°

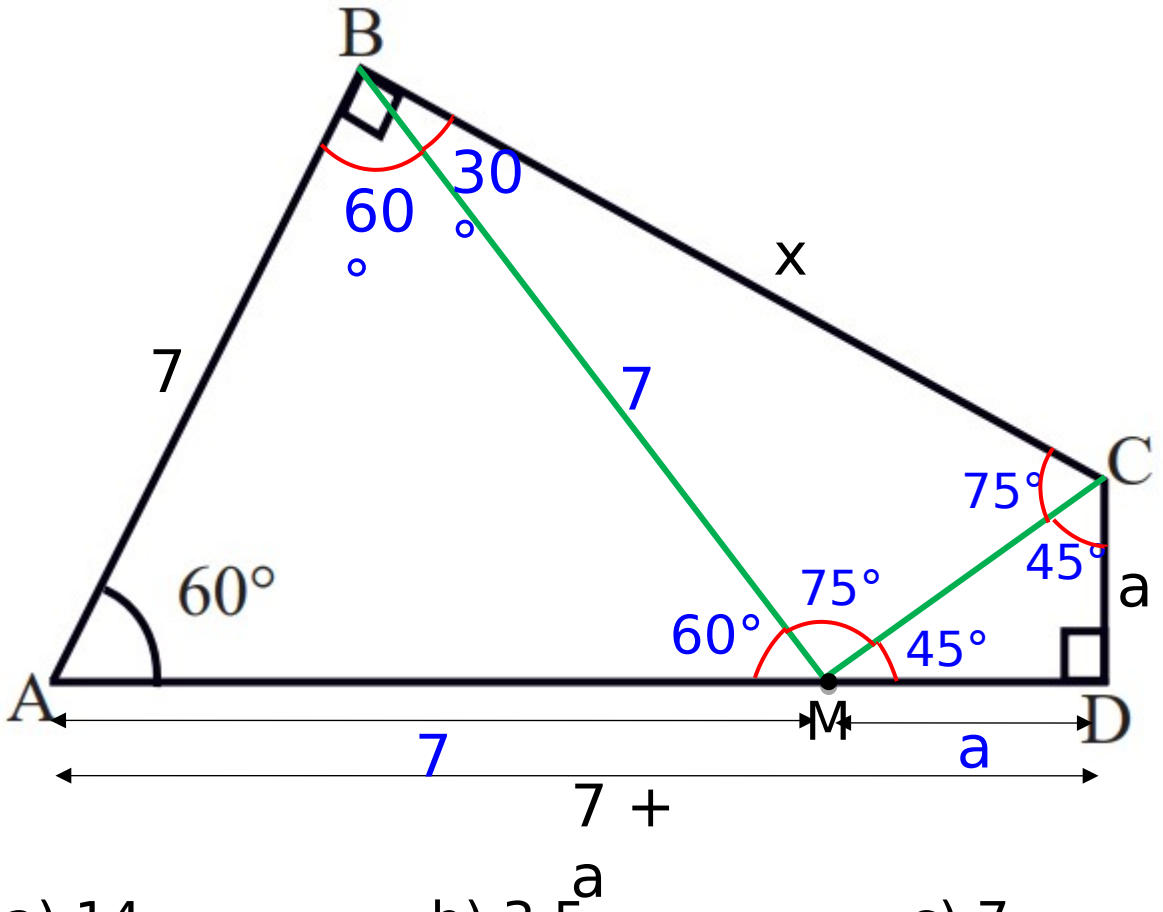
∴ x = 132°

Trilce ACADEMIA

PROBLEMA 31

Del gráfico, calcule: BC.

SI: AB = 7u, AD = AB + CD



a) 14 b) 3,5 c) 7
d) 6

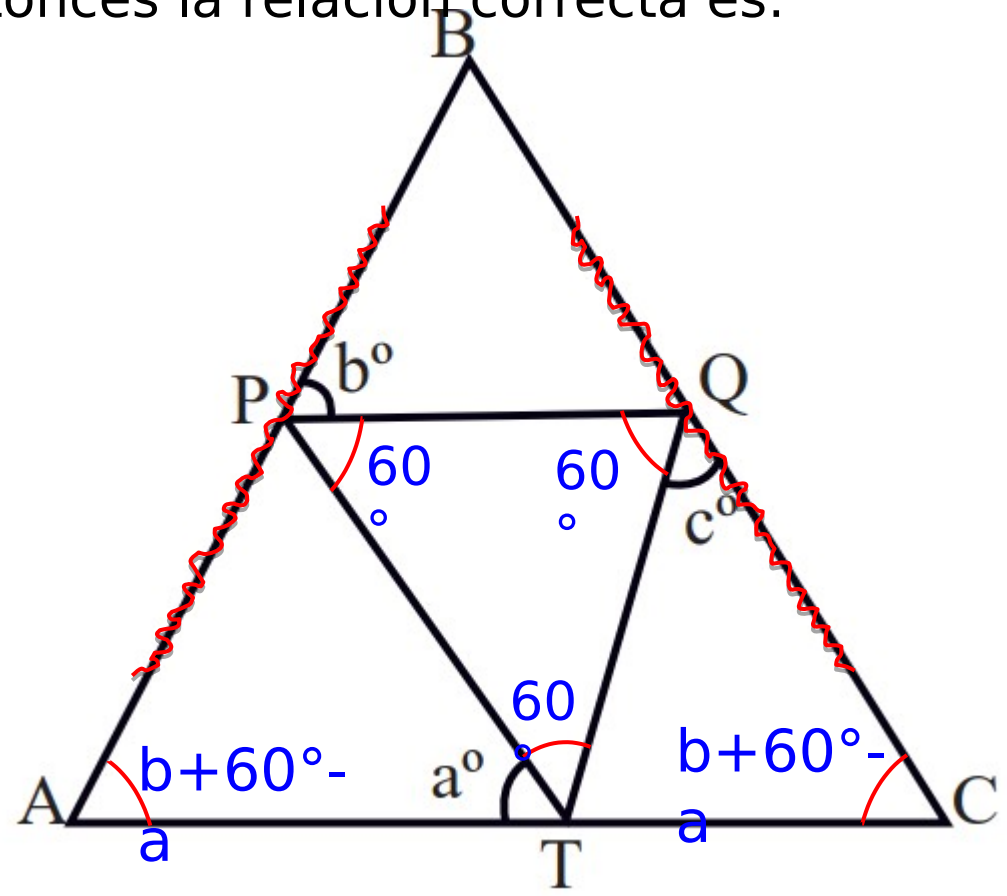
RESOLUCIÓN

Se observa que: El ΔMBC es isósceles

∴ x = 7

PROBLEMA 32

En el gráfico AB = BC y el triángulo PQT es equilátero, entonces la relación correcta es:



RESOLUCIÓN

En el ΔTQC

-

$a + \cancel{60°} = c + \cancel{b} + 60° - a$

$\rightarrow 2a = b + c$

$\therefore 2a = b + c$

a) $2b° = a° + c°$ $a° - c°$

b) $2b° =$

c) $2a° = b° - c°$

d) $2a° =$

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PROBLEMA 33

Se tiene un triángulo obtusángulo ABC, obtuso en B. Si AB = 8 u y BC = 15 u, calcule el mínimo valor entero del lado AC.

a) 16 u b) 17 u c) 18 u
d) 8 u e) 9 u

RESOLUCIÓN

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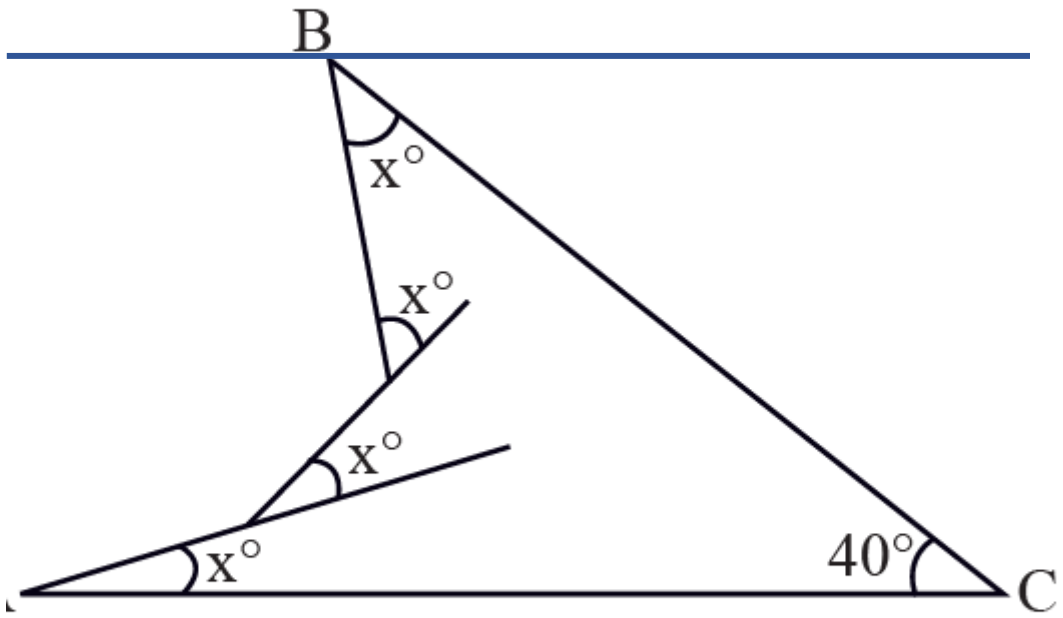
PROBLEMA 34

En el gráfico, calcule "x°".

RESOLUCIÓN



a) 30° b) 32° c) 35°
d) 36° e) 40°

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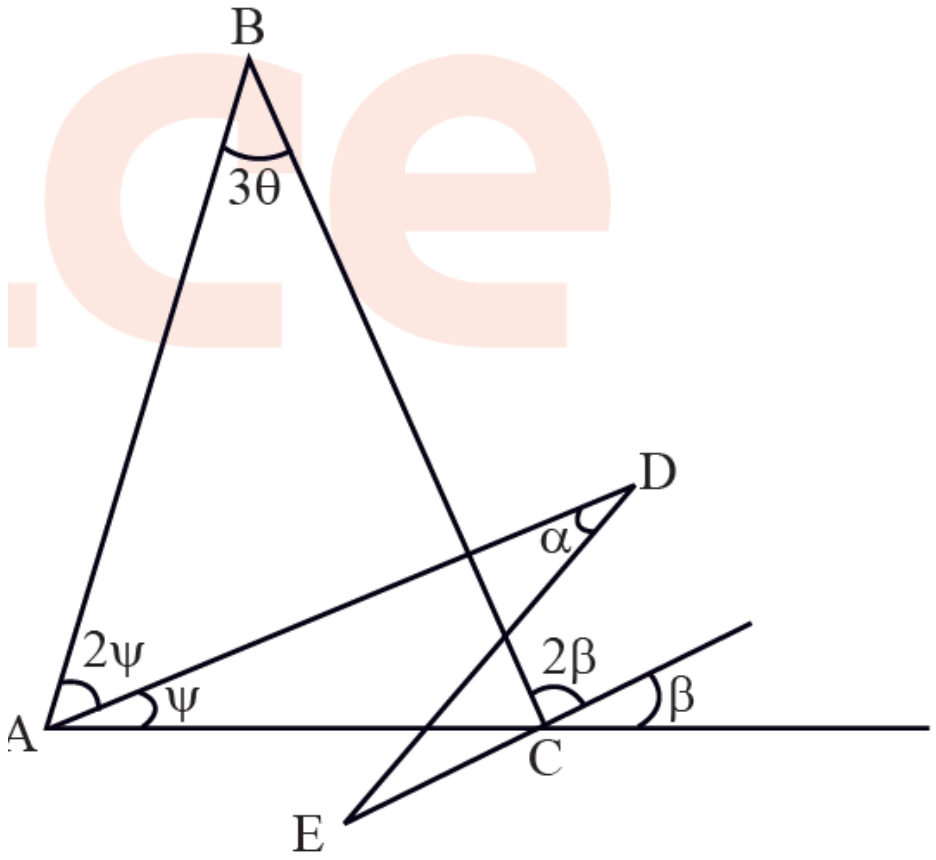
PROBLEMA 35

. En el gráfico, $\alpha° - \theta° = 18°$.

Calcule la $m\sphericalangle DEC$.



a) 16° b) 17° c) 18°
d) 19° e) 36°

RESOLUCIÓN

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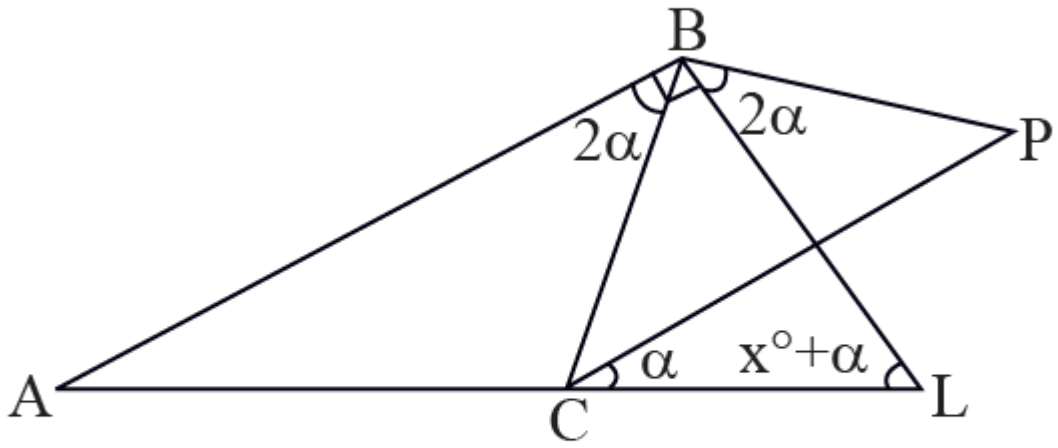
PROBLEMA 36

. En el gráfico, BC = BP. Calcule "x°".



a) 30° b) 40° c) 45°
d) 48° e) 50°

RESOLUCIÓN

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MEJOR PREPARACIÓN A MENOR PRECIO